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PATENT APPLICATION

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ATTORNEY DOCKET NO. 10004117-7IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Alexandre Bronstein et al.

Confirmation No.: 9598

Application No.: 09/882,581

Examiner: Sunray Chang

Filing Date: 06-14-2001

Group Art Unit: 2121

Title: Assessing Health of a Subsystem or Service Within a Networked System

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TRANSMITTAL OF APPEAL BRIEFTransmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on May 15, 2007.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) \$500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

 (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below: 1st Month
\$120 2nd Month
\$450 3rd Month
\$1020 4th Month
\$1590 The extension fee has already been filed in this application. (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.Please charge to Deposit Account 08-2025 the sum of \$ 500. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this transmittal letter is enclosed. I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450

Date of Deposit:

Respectfully submitted,

Alexandre Bronstein et al.

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JUL 1, 6 2007

Applicants: Alexandre Bronstein et al. § Art Unit: 2121
Serial No.: 09/882,581 § § Examiner: Sunray Chang
Filed: June 14, 2001 § § Atty. Dkt. No.: 10004117-7
For: Assessing Health of a § (HPC.0325US)
Subsystem or Service Within a
Networked System § §

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Commissioner for Patents
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Alexandria, VA 22313-1450**

APPEAL BRIEF PURSUANT TO 37 C.F.R. § 41.37

Sir:

The final rejection of claims 1-6 and 8-20 is hereby appealed.

J. REAL PARTY IN INTEREST

The real party in interest is the Hewlett-Packard Development Company L.P..

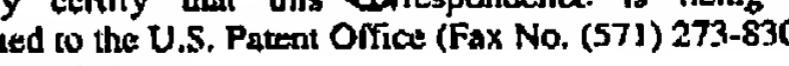
II. RELATED APPEALS AND INTERFERENCES

None.

III. STATUS OF THE CLAIMS

Claims 1-6 and 8-20 have been finally rejected and are the subject of this appeal. Claim 7 has been cancelled.

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IV. STATUS OF AMENDMENTS

No amendment after final has been made.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The following provides a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings by reference characters, as required by 37 C.F.R. § 41.37(c)(1)(v). Each element of the claims is identified by a corresponding reference to the specification and drawings where applicable. Note that the citation to passages in the specification and drawings for each claim element does not imply that the limitations from the specification and drawings should be read into the corresponding claim element.

Independent claim 1 recites a health assessor (Fig. 2:20) for assessing health of a target element (Fig. 2:11-15) within a multi-element system (Fig. 2:10; Specification, 8:18-9:12), comprising:

a plurality of sensors (Fig. 4:40-40n), each being operatively coupled to the target element to produce a measure of the target element (Specification, 9:22-10:10, 12:5-14:3);

a plurality of measure collectors (Fig. 4:60-60k), each collecting a measure from one of the sensors, wherein each of the collectors also stores the measure as historical measure (Specification, 14:4-13);

a plurality of evaluators (Fig. 4:60-60k), each evaluating at least a subset of all the measures collected by the measure collectors in accordance with a pre-configured evaluation definition for the respective evaluator to provide an assessment (Specification, 14:14-15:22);

a probabilistic reasoning network (Fig. 4:70) coupled to the evaluators to receive the assessment from each of the evaluators and to analyze the assessments in accordance with a pre-configured reasoning definition so as to provide an overall probabilistic health assessment of the target element (Specification, 18:9-19:12).

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the probabilistic reasoning network to analyze the assessments from the evaluators according to information indicating reliabilities of the respective evaluators (Specification, 18:13-19).

Independent claim 9 recites a health assessment system (Fig. 2:20) for assessing health of a target element (Fig. 2:11-15) within a multi-element system (Fig. 2:10; Specification, 8:18-19:12), comprising:

a health assessment engine (Fig. 3:30) that receives measures of the target element, the health assessment engine having a probabilistic reasoning network (Fig. 4:70) to provide health assessment of the target element based on the received measures and historical measures of the target element, wherein the historical measures have already been stored in the health assessment engine (Specification, 5:1-5; 11:21-12:14; 18:9-19:12);

a result formatting module (Fig. 3:31) that formats the health assessment into a report (Specification, 12:10-11);

a web interface (Fig. 3:32) that transmits the formatted report to a remote access system via the Internet (Specification, 24:2-5).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- A. **Claims 1-6 and 8-19 were rejected under 35 U.S.C. § 103 over Cynthia Hood, "Intelligent Detection for Fault Management of Communication Networks" (1996) (hereinafter "Hood") in view of U.S. Patent No. 6,502,082 (Toyama).**
- B. **Claim 20 was rejected under § 103 over Hood in view of Toyama and U.S. Patent Application Publication No. 2002/0052882 (Taylor).**

VII. ARGUMENT

The claims do not stand or fall together. Instead, Appellant presents separate arguments for various independent and dependent claims. Each of these arguments is separately argued below and presented with separate headings and sub-headings as required by 37 C.F.R. § 41.37(c)(1)(vii).

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A. **Claims 1-6 and 8-19 were rejected under 35 U.S.C. § 103 over Cynthia Hood, "Intelligent Detection for Fault Management of Communication Networks" (1996) (hereinafter "Hood") in view of U.S. Patent No. 6,502,082 (Toyama).**

1. Claims 1, 2, 5, 6, 8.

Independent claim 1 was rejected as being obvious over Hood and Toyama. It is respectfully submitted that a *prima facie* case of obviousness has not been established, for at least the following two reasons: (1) no reason existed to combine the teachings of Hood and Toyama (*see KSR International Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1741, 82 U.S.P.Q.2d 1385 (2007)); and (2) the hypothetical combination of Hood and Toyama does not disclose or hint at all elements of claim 1. *See In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988) (holding that the PTO has the burden under § 103 to establish a *prima facie* case of obviousness, and that this burden can be satisfied only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings and the references).

To make a determination under § 103, several basic factual inquiries are performed, where two of these basic factual inquiries include: (1) determining the scope and content of the prior art; and (2) ascertaining the differences between the prior art and the claims at issue. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. 459 (1965). Here, it is clear that the objective teachings of Hood and Toyama clearly fail to render obvious the claimed subject matter.

The Examiner conceded that Hood fails to disclose the probabilistic reasoning network to analyze assessments from evaluators according to information indicating reliabilities of the respective evaluators. 2/15/2007 Office Action at 2. However, the Examiner cited Toyama as disclosing the subject matter. *Id.* at 3.

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In rendering the obviousness rejection, the Examiner appeared to have performed a keyword search for the term "reliability" in a reference. Although the term "reliability" and "reliability indicators" are present in Toyama, it is respectfully submitted that the Examiner has taken the teachings of Toyama out of context, as there clearly did not exist any reason to apply the teachings of Toyama to the teachings of Hood.

Toyama teaches an automated motion analysis and visual tracking system to track a human head and facial movements by dynamically providing object position estimates, using Bayesian modality fusion techniques. Toyama, 4:30-33. The Bayesian modality fusion system described in Toyama uses a Bayesian network and integrates distinct "modalities" such as *motion, color, shape, and edge data*. Toyama, 4:36-39. The vision-based tracking system of Toyama tracks objects of a digitized video scene that includes an input sequence of digital images. Toyama, 6:51-54. *Toyama notes that the different types of data present in the image sequence, such as color, edge, shape, and motion, are considered different sensing modalities*. Toyama, 6:58-60.

The Examiner cited the following passages of Toyama to support the obviousness rejection: column 8, line 52-column 9, line 46; column 2, lines 22-54. The passage cited in columns 8 and 9 refers to reliability indicators for each sensing modality, as well as to a ground-truth reliability. The passage cited in column 2 of Toyama refers to a system for training a Bayesian network to capture probabilistic dependencies between the true state of the object being tracked and evidence from the tracking modalities. The cited column 2 passage also notes that multiple sensing modalities can be fused to infer the structure of a dynamic model such as a Bayesian network.

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The reliability indicators referred to are reliability indicators of *sensing modalities*, which include data relating to *color, edge, shape, and motion* associated with an *image sequence*. The reliability indicators of Toyama clearly are not reliability indicators of *respective evaluators*, where each evaluator evaluates at least a subset of all measures collected by measure collectors in accordance with a pre-configured evaluation definition for the respective evaluator to provide an assessment, as recited in claim 1. Therefore, since the factual inquiries performed according to *Graham v. John Deere* establish that both Hood and Toyama fail to disclose or hint at a probabilistic reasoning network that analyzes assessments from evaluators according to *information indicating reliabilities of respective evaluators*, the hypothetical combination of Hood and Toyama does not disclose or hint at all elements of claim 1. In other words, the differences ascertained between the cited prior art teachings and the claimed invention are significant. The obviousness rejection is defective for at least this reason.

Moreover, a person of ordinary skill in the art would not have found any reason to combine the teachings of Hood and Toyama to achieve the claimed invention. Toyama has nothing to do with a health assessor for assessing health of a target element. In fact, Toyama relates to a vision-based tracking system for tracking human head or facial expressions. Hood, on the other hand, describes a network monitoring system for detecting faults in the network. There existed absolutely no reason to incorporate components of a vision-based tracking system for tracking the human head or facial expressions (Toyama) into a network monitoring system that monitors for faults in a network (Hood). The only apparent basis for making the combination of Hood and Toyama is the disclosure of the present invention. However, using the present invention to piece together elements of prior art references constitutes impermissible hindsight, which is prohibited.

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In fact, in the assertion of obviousness, the Examiner made the following statement:

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of **Hood** to include "the probabilistic reasoning network to analyze the assessments from the evaluators according to information indicating reliabilities of the respective evaluators", for the purpose of effectively capturing probabilistic dependencies between the true state of the object being tracked and evidence from the tracking modalities [Col. 2, lines 28-30; see further Col. 2, lines 22-54].

The Examiner stated it would have been obvious to modify the teaching of **Hood** to include "the probabilistic reasoning network to analyze the assessments from the evaluators according to information indicating reliabilities of the respective evaluators." This language was specifically lifted from the claim. There is no teaching in **Toyama** of this feature. Also, on page 2 of the Office Action, the Examiner incorrectly stated that **Toyama** "teaches the probabilistic reasoning network to analyze the assessments from the evaluators according to information indicating reliabilities of the respective evaluators." As discussed above, the reliability indicators referred to in **Toyama** are reliability indicators of sensing modalities, which include data relating to color, edge, shape, and motion associated with an image sequence. There is absolutely no indication that these reliability indicators of **Toyama** refer to reliabilities of *evaluators*. Thus, the basis for the assertion of obviousness by the Examiner is clearly incorrect.

In view of the foregoing, it is apparent that no reason existed that would have prompted a person of ordinary skill in the art to combine **Hood** and **Toyama**.

Therefore, a *prima facie* case of obviousness has not been established with respect to claim 1 and its dependent claims.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

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2. Claims 3, 4.

Dependent claim 3 is allowable for at least the same reasons as corresponding base claim 1. Moreover, claim 3 recites that each of the evaluators further comprises an evaluation definition store that stores the pre-configured evaluation definition of the evaluator, and an evaluation module to provide the assessment by statistically comparing the subset of the measures and historical measures based on the pre-configured evaluation definition.

The Examiner cited section 1.2.1 and section 1.2.2 on pages 5 and 6 of Hood as disclosing the evaluation module element of claim 3. These sections of Hood refer to providing some definition of network behavior and then learning the network behavior from data. Fig. 1.3 in section 1.2.2 of Hood shows the inputs to a Bayesian network. However, there is no teaching or hint by these sections of Hood of multiple evaluators, each having an evaluation module to provide an assessment by statistically comparing a subset of measures and historical measures based on the pre-configured evaluation definition.

This is a further reasons that claim 3, and its dependent claim, are allowable over Hood and Toyama.

In view of the foregoing, reversal of the final rejection of the above claims is respectfully requested.

3. Claim 18.

Dependent claim 18 is allowable for at least the same reasons as base claim 1. Moreover, claim 18 recites that the evaluation definition of a first one of the evaluators specifies that a first evaluator is to receive measures from a first group of the measure collectors, and the evaluation definition of a second one of the evaluators specifies that the second evaluator is to receive measures from a second, distinct group of the measure collectors. The Examiner cited column 7,

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line 61 through column 8, line 51 of Toyama as disclosing this feature. 2/15/2007 Office Action at 9. The cited passage refers to "fusion of multiple modalities," where a model for inferring the probability distribution over the true state of a target is considered from a report by a single modality. However, the fusion of modalities refers to the fusion of modalities such as motion, color, shape, and edge data. There is absolutely no hint given anywhere in the cited passage of Toyama, or anywhere else in Toyama, of providing different evaluation definitions for different evaluators to specify that the different evaluators are to receive measures from different groups of measure collectors.

This is a further reason that claim 18 is not taught or hinted at by Hood and Toyama. Reversal of the final rejection of the above claim is respectfully requested.

4. **Claims 9, 13-17.**

Independent claim 9 was also rejected as being obvious over Hood and Toyama. It is also respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claim 9 over Hood and Toyama. As conceded by the Office Action, Hood fails to disclose a web interface that transmits the formatted report to a remote access system by the Internet. 2/15/2007 Office Action at 6. Instead, the Examiner relied upon Toyama as disclosing this feature. *Id.*

The Examiner cited specifically to the following passage of Toyama: column 6, lines 17-44. The cited passage in Toyama describes components of a computer 100, which components include connections to a network, such as the Internet. However, there is no hint in this passage of Toyama, or anywhere else in Toyama, of a web interface that transmits a formatted report (that contains a health assessment of a target element) to a remote access system via the Internet. Note that Toyama describes a vision-based tracking system for tracking a

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human head or facial expressions. Therefore, it would be impossible for Toyama to teach or suggest a web interface that transmits a *formatted report containing health assessment of a target element* via the Internet.

The Examiner further argued that Toyama "indicates a WAN network environment," and "a computer with a modem for establishing communications over the wide area network, such as Internet." 2/15/2007 Office Action at 11. However, the fact that Toyama may disclose a WAN does not change the fact that there is no hint provided in Hood and Toyama of a web interface that transmits the *formatted report* (containing a health assessment of a target element based on the received measures and historical measures of the target element) to a remote access system via the Internet.

In view of the foregoing, it is clear that the hypothetical combination of Hood and Toyama fails to disclose or hint at all elements of claim 9. Moreover, as discussed above in connection with claim 1, a person of ordinary skill in the art would not have been prompted to combine the teachings of Hood and Toyama to achieve the claimed invention. Therefore, a *prima facie* case of obviousness has not been established with respect to claim 9 and its dependent claims.

Reversal of the final rejection of the above claims is respectfully requested.

5. Claims 10-12.

Dependent claim 10 is allowable for at least the same reasons as base claim 9. Moreover, claim 10 recites a plurality of evaluators, each evaluating at least a subset of all the measures collected by the measure collectors in accordance with a (1) pre-configured evaluation definition for the respective evaluator and (2) at least a subset of all historical measures of the target element that have already been stored in the collector to provide an assessment. The Examiner

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cited pages 5 and 6 of Hood, section 1.2.1, and Fig. 1.1-1.2, of Hood, as disclosing the above feature of claim 10. Fig. 1.1 of Hood shows a monitoring system that has an observation processing block to receive raw measurement variables, and a combination of information block to provide a node's view of network behavior. Fig. 1.2 of Hood shows a segmentation block that receives raw measurement variables, a feature extraction block, and a probability learning/estimation block to produce estimated probabilities. Neither of these figures provide any teaching or hint of evaluators that each evaluate at least a subset of all measures collected by measure collectors in accordance with a pre-configured evaluation definition for the respective evaluator and at least a subset of all historical measures of the target element that have already been stored in the collector to provide an assessment. Also, no other passage on pages 5 and 6 of Hood provides the teaching of the plurality of evaluators as recited in claim 10. Therefore, in view of the foregoing reasons, claim 10 and its dependent claims are further allowable over Hood and Toyama.

Reversal of the final rejection of the above claims is respectfully requested.

6. Claim 19.

Dependent claim 19 is allowable for at least the same reasons as base claim 9. Moreover, claim 19 recites that the probabilistic reasoning network generates the health assessment based on the assessments provided by the measure evaluators and based on information indicating *trustworthiness* of respective measure evaluators. As discussed above, although Toyama refers to reliability indicators, these reliability indicators are for the modalities such as color, edge, shape, and motion data in an image sequence. Therefore, claim 19 is further allowable for the foregoing reasons.

Reversal of the final rejection of claim 19 is respectfully requested.

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B. Claim 20 was rejected under § 103 over Hood in view of Toyama and U.S. Patent Application Publication No. 2002/0052882 (Taylor).

1. Claim 20.

In view of the defective obviousness rejection of base claim 9 over Hood and Toyama, it is respectfully submitted that the obviousness rejection of claim 20 over Hood, Toyama, and Taylor is also defective. Therefore, reversal of the final rejection of the above claim is respectfully requested.

CONCLUSION

In view of the foregoing, reversal of all final rejections and allowance of all pending claims is respectfully requested.

Respectfully submitted,

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VIII. APPENDIX OF APPEALED CLAIMS

The claims on appeal are:

- 1 1. A health assessor for assessing health of a target element within a multi-element system, comprising:
 - 3 a plurality of sensors, each being operatively coupled to the target element to produce a measure of the target element;
 - 5 a plurality of measure collectors, each collecting a measure from one of the sensors, wherein each of the collectors also stores the measure as historical measure;
 - 7 a plurality of evaluators, each evaluating at least a subset of all the measures collected by the measure collectors in accordance with a pre-configured evaluation definition for the respective evaluator to provide an assessment;
 - 10 a probabilistic reasoning network coupled to the evaluators to receive the assessment from each of the evaluators and to analyze the assessments in accordance with a pre-configured reasoning definition so as to provide an overall probabilistic health assessment of the target element,
 - 14 the probabilistic reasoning network to analyze the assessments from the evaluators according to information indicating reliabilities of the respective evaluators.
- 1 2. The health assessor of claim 1, wherein the evaluation definition of an evaluator determines which of the measures collected by all of the measure collectors are to be received by the respective evaluator.
- 1 3. The health assessor of claim 1, wherein each of the evaluators further comprises an evaluation definition store that stores the pre-configured evaluation definition of the evaluator;
 - 4 an evaluation module coupled to the evaluation definition store to provide the assessment by statistically comparing the subset of the measures and the historical measures based on the pre-configured evaluation definition.

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1 4. The health assessor of claim 3, wherein the operation of an evaluator can be
2 changed by replacing the pre-configured evaluation definition for that evaluator with a new
3 evaluation definition.

1 5. The health assessor of claim 1, wherein the reasoning network is a Bayesian
2 network probabilistic reasoning network.

1 6. The health assessor of claim 1, wherein the overall probabilistic health assessment
2 of the target element is a probability that the target element is healthy.

1 8. The health assessor of claim 1, wherein the operation of the probabilistic reasoning
2 network can be changed by replacing the pre-configured reasoning definition with a new
3 reasoning definition.

1 9. A health assessment system for assessing health of a target element within a
2 multi-element system, comprising:
3 a health assessment engine that receives measures of the target element, the health
4 assessment engine having a probabilistic reasoning network to provide health assessment of the
5 target element based on the received measures and historical measures of the target element,
6 wherein the historical measures have already been stored in the health assessment engine;
7 a result formatting module that formats the health assessment into a report;
8 a web interface that transmits the formatted report to a remote access system via
9 the Internet.

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1 10. The health assessment system of claim 9, wherein the health assessment engine
2 further comprises

3 a plurality of sensors, each being operatively coupled to the target element to
4 produce a measure of the target element;

5 a plurality of measure collectors, each collecting a measure from one of the
6 sensors, wherein each of the collectors also stores the measure as historical measure;

7 a plurality of evaluators, each evaluating at least a subset of all the measures
8 collected by the measure collectors in accordance with a (1) pre-configured evaluation definition
9 for the respective evaluator and (2) at least a subset of all historical measures of the target
10 element that have already been stored in the collector to provide an assessment;

11 wherein the probabilistic reasoning network is coupled to the evaluators to receive
12 the assessment from each of the evaluators and to analyze all the assessments in accordance with
13 a pre-configured reasoning definition so as to provide an overall health assessment of the target
14 element.

1 11. The health assessment system of claim 10, wherein each of the evaluators further
2 comprises

3 an evaluation definition store that stores the pre-configured evaluation definition
4 of the evaluator;

5 an evaluation module coupled to the evaluation definition store to provide the
6 assessment by statistically comparing the subset of the measures and the historical measures
7 based on the pre-configured evaluation definition.

1 12. The health assessment system of claim 11, wherein the operation of an evaluator
2 can be changed by replacing the pre-configured evaluation definition for that evaluator with a
3 new evaluation definition.

1 13. The health assessment system of claim 9, wherein the probabilistic reasoning
2 network is a Bayesian network probabilistic reasoning network.

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1 14. The health assessment system of claim 13, wherein the probabilistic reasoning
2 network further comprises a reasoning definition store that stores a pre-configured reasoning
3 definition, wherein the pre-configured reasoning definition defines how the probabilistic
4 reasoning network should analyze all the assessments received from the evaluators to produce
5 the overall health assessment of the target element

1 15. The health assessment system of claim 14, wherein the operation of the
2 probabilistic reasoning network can be changed by replacing the pre-configured reasoning
3 definition with a new reasoning definition.

1 16. The health assessment system of claim 9, wherein the remote access system is the
2 target element.

1 17. The health assessment system of claim 9, wherein the remote access system is a
2 remote access terminal or an application.

1 18. The health assessor of claim 1, wherein the evaluation definition of a first one of
2 the evaluators specifies that the first evaluator is to receive measures from a first group of the
3 measure collectors, and the evaluation definition of a second one of the evaluators specifies that
4 the second evaluator is to receive measures from a second, distinct group of the measure
5 collectors.

1 19. The health assessment system of claim 9, wherein the health assessment engine
2 further comprises sensors to provide the measures, measure evaluators to provide assessments
3 based on the measures from the sensors and the historical measures,

4 wherein the probabilistic reasoning network generates the health assessment
5 based on the assessments provided by the measure evaluators and based on information
6 indicating trustworthiness of respective measure evaluators.

1 20. The health assessment system of claim 9, wherein the result formatting module
2 formats the health assessment into an XML report.

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IX. EVIDENCE APPENDIX

None.

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X. RELATED PROCEEDINGS APPENDIX

None.